MULTI-CHIP MODULE SEMICONDUCTOR DEVICE

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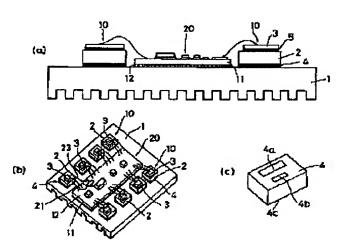
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Abstract of JP9213877

PROBLEM TO BE SOLVED: To provide a semiconductor device which is excellent in electrical insulation property, thermal conductivity, heat resistance, and low in manufacturing cost. SOLUTION: A multi-chip module semiconductor device is equipped with a power circuit provided with power devices 3 and a control circuit which controls the power circuit, where the power circuit and the control circuit are both mounted on the same heat dissipating plate. The power devices 3 are mounted on the heat dissipating plate by soldering through the intermediary of a heat spreader 2 provided with a ceramic insulating layer. At this point, the heat spreader 2 is provided with the insulating layer of AIO or AIN which is high in thermal conductivity or has a thermal conductivity of above 0.2W/ deg.C.cm and high in heat resistance or capable of withstanding a temperature of 300 deg.C or above, and the upside or underside of the insulating layer is subjected to a metallizing treatment for soldering.



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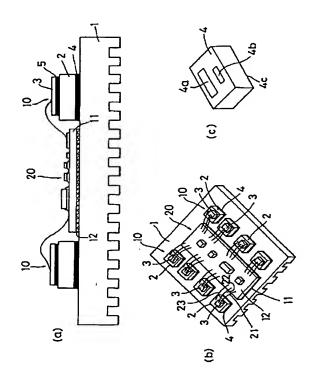
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(54) 【発明の名称】 マルチチップモジュール半導体装置

(57)【要約】

【課題】 電気的絶縁性、高熱伝導性且つ高耐熱性に優 れ、低コストで、高信頼性のマルチチップモジュール半 導体装置を提供することである。

【解決手段】 複数のパワー素子を有するパワー回路部 と、このパワー回路部を制御する制御回路部とが同一放 熱板上に実装されたマルチチップモジュール半導体装置 において、前記各パワー素子は、セラミックス系の絶縁 層を有するヒートスプレッタを介して前記放熱板に半田 付けによって実装した。その際、前記ヒートスプレッタ は、熱伝導率がO. 2W/℃・cm以上の高熱伝導性で あり且つ300℃以上の髙耐熱性を有するA 12 03 層 またはAIN層で前記絶縁層を構成し、この絶縁層の上 面及び下面側に半田付け可能なメタライズ処理を施し t:。



【特許請求の範囲】

【請求項1】 複数のパワー素子を有するパワー回路部と、このパワー回路部を制御する制御回路部とが同一放 熱板上に実装されたマルチチップモジュール半導体装置 において、

前記各パワー素子は、セラミックス系の絶縁層を有する ヒートスプレッタを介して前記放熱板に半田付けによっ て実装したことを特徴とするマルチチップモジュール半 導体装置。

【請求項2】 前記ヒートスプレッタは、熱伝導率が 0.2W/℃・cm以上の高熱伝導性であり且つ300 ℃以上の高耐熱性を有するA | 2 O3 層またはA | N層 で前記絶縁層を構成し、この絶縁層の上面及び下面側に 半田付け可能なメタライズ処理を施したものであること を特徴とする請求項1記載のマルチチップモジュール半 導体装置。

【請求項3】 前記ヒートスプレッタは、熱伝導率が 0.2W/℃・cm以上の高熱伝導性であり且つ300 ℃以上の高耐熱性を有するA 12 03 層またはA 1 N層で前記絶縁層を構成し、この絶縁層の上面及び下面側に Cuペーストの印刷焼成による Cu厚膜を形成したものであることを特徴とする請求項 1 記載のマルチチップモジュール半導体装置。

【請求項4】 前記制御回路部は、プリント基板、セラミックス基板または金属基板を用いて構成したことを特徴とする請求項1乃至請求項3記載のマルチチップモジュール半導体装置。

【請求項5】 トランスファーモールド法により外囲器を成型したことを特徴とする請求項1乃至請求項4記載のマルチチップモジュール半導体装置。

【発明の詳細な説明】

[0001]

【発明の属する技術分野】本発明は、複数のパワー素子とこれを個別する制御する回路とを搭載したマルチチップモジュール半導体装置に関する。

[0002]

【従来の技術】図5は、従来の一般的なハイブリッジ・ モータドライブ回路の回路図であり、図6はその等価回 路図である。

【0003】このHブリッジ・モータドライブ回路は、パワー素子としてのFET101、102、103、104を備え、この各FET101~104は、入力端子111、112、113、114へ供給される制御部(図示しない)からの制御信号により個別に制御され、出力端子121と122に接続されるモータ130を駆動する。

【0004】すなわち、前記制御部は、当該Hブリッジ・モータドライブ回路の各FET101~104をオン /オフを制御して、電流の流れる方向を例えば図6に示すP1、P2のように変え、モータ130に正転、逆転 及びブレーキなどの制御を行う。

【0005】このような複数のパワー素子が個別に制御されるHブリッジ・モータドライブ回路などの回路を実現する場合において、通常、電源ーグランドライン間、及び各パワー素子のソースードレイン間には大電流が流れ、これによって生じた熱を放熱するため、従来では、以下に示すような金属ペース基板やDBC基板を用いて部品実装を行っている。

【0006】図7は、従来のマルチチップモジュール半導体装置の第1の構成例(第1の従来装置)を示す断面図である。

【0007】この半導体装置は、ベース基板(AI、Cuなど)201上に熱可塑性樹脂からなる絶縁層202を介して銅箔による配線パターン203が施された金属ベース基板200を備えている。そして、配線パターン203上に、ヒートスプレッタ204を介して発熱する各パワー素子205がマウントされている。ここで、ヒートスプレッタ204は、高信頼性を要求される場合TFT耐量(パワーサイクル耐量)の向上のためシリコンに近い膨脹係数の材質が用いられ、例えばモリブデン

(Mo) などで構成されている。また、前記ヒートスプレッタ204は配線パターン203に半田206で半田付けされ、さらに前記各パワー素子205はヒートスプレッタ204上に半田207で半田付けされた上、所定のワイヤボンディング処置が施されている。

【〇〇〇8】ここで、前記TFT耐量(パワーサイクル耐量)について簡単に説明する。パワー素子をオンして大電流Iを流すと、そのオン抵抗RONにより、I²×RONの発熱が生ずる。パワーサイクルテストは、パワー素子をオン/オフして発熱/冷却の繰り返しを行うテストであり、このテスト時に、パワー素子(Si)、半田(Pb.Sn等)、ヒートスプレッタ(Cu等)の熱膨脹係数の違いにより半田部に微小クラック、ぜい化(ボイド)が生ずる。この半田部に生じた微小クラックはボイド)が生ずる。この半田部に生じた微小クラックがぜい化によって、パワー素子で発生した熱をヒートスプレッタに逃がす効率が悪化する。これは、定量的に熱抵抗があるに逃がす効率が悪化する。これは、定量的に熱抵抗があるの一つとなっている。TFT耐量は、この熱抵抗がある値より悪化したときの繰り回り回数を示している。

【0009】図8は、従来のマルチチップモジュール半 導体装置の第2の構成例(第2の従来装置)を示す断面 図である。

【0010】この半導体装置は、セラミックス基板301の表面に配線パターン(銅箔)302が施され且つ裏面に銅箔303が形成されたDBC基板300を備えている。そして、配線パターン302上にはパワー素子304が半田305によって直接半田付けされ上、所定のワイヤボンディング処置が施されている。

【0011】図9は、従来のマルチチップモジュール半 導体装置の第3の構成例(第3の従来装置)を示す断面 図である。

【 O O 1 2 】この半導体装置は、複数のパワー素子をそれぞれ搭載した各チップ部と制御部等の周辺回路部とを分離したもので、各チップ部は、最小限の面積の部分金属ベース基板を含むヒートスプレッタを介してパワー素子をベースメタル上にマウントし、周辺回路部は安価なガラス・エポキシ・プリント配線基板(以下、ガラエポ基板という)にマウントし、両者をボンディングなどの方法で接続している。

【0013】すなわち、ベースメタル(AI、Cuなど)401上には、接着剤または半田からなる固着部材402によりヒートスプレッタ403がマウントされ、さらに該ヒートスプレッタ403上にパワー素子404が半田405によって半田付けされて、各チップ部が形成されている。ここで、ヒートスプレッタ403は、金属ベース層(AIなど)403a、樹脂絶縁層403b及び銅箔403cが順次積層されたものである。

【 O O 1 4 】また、ベースメタル4 O 1上のチップ部の周辺には、周辺回路部を形成すべく、配線パターン4 1 Oがプリントされたガラエポ基板4 1 1が固着され、該配線パターン4 1 Oには各種電子部品(図示省略)が実装されている。

[0015]

【発明が解決しようとする課題】しかしながら、上記第 1、第2及び第3の従来装置では次のような問題点があった。以下、図10(a),(b),(c)及び図11 を用いて具体的に説明する。

【0016】図10(a),(b),(c)は、従来装置の問題点を説明するための図であり、同図(a)は主な部材の熱伝導率、同図(b)は各種ヒートスプレッタ(1cm角)の熱抵抗、同図(c)は上記第3の従来装置のチップ部の熱抵抗を示す。また、図11は、半田中のPb含有率とパワーサイクル耐量との関係を示すグラフである。

【0017】(1)金属ベース基板上にパターンニングを施しヒートスプレッタを介して各パワー素子を搭載した上記第1の従来装置では、金属ベース基板200のコストが高いだけでなく、該金属ベース基板200の絶縁層202が熱可塑性樹脂を使用していることから、図10(a)に示すようにその熱伝導率は0.035W/℃・cmと悪く、300℃以上の耐熱がない。

【0018】(2) DBC基板を使用する上記第2の従来装置では、耐熱及び熱抵抗(放熱性)とも良好であるが、基板コストが高くなる。

【0019】(3)部分的に金属ベース基板を使用した上記第3の従来装置では、コストは全て金属ベース基板を使用したもの(第1の従来装置)より低減されるものの、熱抵抗が非常に悪化し実用的でない。例えば、樹脂絶縁層403bの熱伝導率の悪さを伝熱面積でカバーすることができず、図10(b).(c)に示す例を基に

概算すると、Cu(銅)で構成されるヒートスプレッタに対して、底面半田付け方式(固着部材402が半田)で約9.9倍、底面接着方式(固着部材402が接着剤)で25倍程熱抵抗が悪化する。

【0020】ここで、図10(b), (c)について説 明する。図10(b)では、厚さ1.5mmのCu、C KC(Cu/コパール/Cuの積層)、及び窒化アルミ ニュウム (AIN) の各々の熱抵抗は、それぞれ〇. 〇 37、0.469、0.115 (℃/W) であることを 示している。図10(c)の底面接着方式の場合では、 Cu(パワー素子404の裏面:厚さ1.0mm)、半 田405 (厚さ0. 1mm)、Cu403c (厚さ0. 1mm)、樹脂絶縁層403b(厚さ0.1mm)、ア ルミニウム403a(厚さ1.0mm)、及び接着剤4 02 (厚さ0.05mm) とした例では、熱抵抗が0. 951 (℃/W) となる。また、底面半田付け方式の場 合では、Cu(パワー素子404の裏面:厚さ1.0m m)、半田405 (厚さ0.1mm)、Cu403c (厚さO. 1mm)、樹脂絶縁層403b (厚さO. 1 mm)、Cu403a(厚さ1.0mm)、及び半田4 02 (厚さ0. 1mm) とした例では、熱抵抗が0. 3 67 (°C/W) となることを示している。

【0021】さらに、図11のグラフでは、半田中のPb含有率が高くなるとTFT耐量が向上することが示されているが(Pbの含有率が高くなると、上記繰り回に対して半田のクラック、ぜい化が発生しにくくなる)、この図11から明らかなように、上記第3の従来装置において、信頼性向上のためTFT耐量=10Kcycle以上保証するためには、Pbの含有率が90%以上の半田をチップ下(半田405)に使用する必要がある。その結果、半田405の融解温度は314℃)、300℃以上の耐熱があるヒートスプレッタ403があるといる。ヒートスプレッタ403があるヒートスプレッタ403があるとなる。ヒートスプレッタ403に使用される樹脂絶縁層403bは、熱可塑性樹脂であるため250℃以上の耐熱を持たない。従って、高信頼性のチップ部を形成することができない。

【0022】このように、上記第3の従来装置では、熱抵抗の悪化やチップ部の信頼性の低下が問題となるが、この点を改善する手法としては、①耐熱性に優れたDBC基板を各ヒートスプレッタとして使用する方法、②各ヒートスプレッタをCuやCKC、Moなどの金属で構成して樹脂絶縁層を設けないようにする方法が考えられる

【0023】しかし、上記手法①では、パワー素子404のヒートスプレッタとして、複数のDBC基板を使用することになるが、このような手法であっても、DBC基板は高価であるため、上記第2の従来装置の場合とコスト差が少なく、第2の従来装置と同様にコスト面で問題となる。

【0024】また、上記手法②のように、各ヒートスプレッタを金属で構成し、該金属ヒートスプレッタを直接半田付けでベースメタル401にマウントした場合は、複数の電流経路を形成することが困難となり、各パワー素子404を個別に制御することができない。すなわち、複数のパワー素子404の下にそれぞれ金属ヒートスプレッタを設け、これを半田付けでベースメタル401上にマウントすると、各チップ404のドレイン面(チップの裏面)が全て同電位となり、各パワー素子404を個別に制御することができなくなる。

【0025】上記第1、第2及び第3の従来装置の問題点を一覧比較したものを図12に示す。なお、図中の矢印は、金属ベース基板のグレードをアップした場合を示し、グレードアップした場合はコストも高くなる。

【0026】本発明は、上述の如き従来の問題点を解決するためになされたもので、その目的は、パワー素子と放熱板の電気的絶縁を完全に保つことができ、しかも高熱伝導性且つ高耐熱性に優れたマルチチップモジュール半導体装置を提供することである。またその他の目的は、低コストで、高信頼性のマルチチップモジュール半導体装置を提供することである。

[0027]

【課題を解決するための手段】上記目的を達成するために、第1の発明の特徴は、複数のパワー素子を有するパワー回路部と、このパワー回路部を制御する制御回路部とが同一放熱板上に実装されたマルチチップモジュール半導体装置において、前記各パワー素子は、セラミックス系の絶縁層を有するヒートスプレッタを介して前記放熱板に半田付けによって実装したことにある。

【0028】この第1の発明によれば、ヒートスプレッタは、チップ搭載面と底面との電気的絶縁を完全に保つことができ、しかも高熱伝導性且つ高耐熱性となる。ヒートスプレッタのチップ搭載面と底面との電気的絶縁を完全に保つことができるので、各ヒートスプレッタを放熱板に直接半田付けすることが可能となり、パワー素子と放熱板とは低熱抵抗で結合される。さらに、高耐熱性であることから、Pb含有率90%以上の半田をパワー素子下のヒートスプレッタに使用することができるためTFT耐量が大きくなり、装置の信頼性が向上する。

【0029】第2の発明の特徴は、上記第1の発明において、前記ヒートスプレッタについて、熱伝導率が0.2W/℃・cm以上の高熱伝導性であり且つ300℃以上の高耐熱性を有するA12 O3 層またはAIN層で前記絶縁層を構成し、この絶縁層の上面及び下面側に半田付け可能なメタライズ処理を施したことにある。

【0030】この第2の発明によれば、優れた熱伝導率、高耐熱性及び絶縁性を備えたヒートスプレッタを安価に作製することが可能となる。

【0031】第3の発明の特徴は、上記第1の発明において、前記ヒートスプレッタについて、熱伝導率が0.

2W/℃・cm以上の高熱伝導性であり且つ300℃以上の高耐熱性を有するAI2 O3 層またはAIN層で前記絶縁層を構成し、この絶縁層の上面及び下面側にCuペーストの印刷焼成によるCu厚膜を形成したことにある。

【0032】この第3の発明によれば、優れた熱伝導率、高耐熱性及び絶縁性を備えたヒートスプレッタを安価に作製することが可能となるとともに、パワー素子と放熱板とは一層の低熱抵抗で結合される。

【0033】第4の発明の特徴は、上記第1乃至第3の 発明において、前記制御回路部は、プリント基板、セラ ミックス基板または金属基板を用いて構成したことにあ る。

【0034】この第4の発明によれば、制御回路部を安価に且つ高密度に実現することができる。

【0035】第5の発明の特徴は、上記第1乃至第4の 発明において、トランスファーモールド法により外囲器 を成型したことにある。

【0036】この第5の発明によれば、コスト、生産性を一層向上させることができる。

[0037]

【発明の実施の形態】以下、本発明の実施形態を図面に基づいて説明する。図1(a).(b).(c)は、本発明の第1実施形態に係るマルチチップモジュール半導体装置の構成を示す図であり、同図(a)はその断面図、同図(b)はその斜視図、及び同図(c)はパワー素子の概略外観図である。

【0038】この半導体装置は、例えば上記図5に示したHブリッジ・モータドライブ回路を実現するものであり、ベース外部放熱器1を備えている。そして、ベース外部放熱器1上には、パワー素子をそれぞれ搭載した複数のチップ部10と、そのパワー素子の動作を制御する制御部等の周辺回路部20とがマウントされ、その両者はワイヤボンディングで接続されている。

【0039】各チップ部10には、本発明の特徴を成す ヒートスプレッタ2(後述する)を介してパワー素子3 がそれぞれ搭載されている。その際、前記ヒートスプレ ッタ2はベース外部放熱器1に高温半田(Pb含有率9 0%以上)4で半田付けされ、さらに前記各パワー素子 3はヒートスプレッタ2上に半田5で半田付けされてい

【0040】また、ベース外部放熱器1の上面に接着剤等により固着されたガラエポ基板11が設けられ、その基板11上に各種電子部品が高密度に実装されて前記周辺回路部20が構成されている。なお、周辺回路部20の基板としては、ガラエポ基板のほか、例えば厚膜セラミックスや金属基板などであってもよい。

【0041】各パワー素子3は、図1(c)に示すように、MOS-FEFの場合上面側にソース電極4aとゲート電極4bが形成され、下面側にドレイン電極4cが

形成されている。そして、同図(b)に示すように、各パワー素子3のソース電極4a、ゲート電極4b及びドレイン電極4cが、それぞれ金線などのワイヤ21,22、23を介して周辺回路部20にボンディングされている。なお、ワイヤ23のドレイン電極4c側の一端は、ヒートスプレッタ2の最上面にボンディングされている。

【0042】図2(a)~(e)は、上記図1中のヒートスプレッタ2の具体的構成例を示す断面図である。

【0043】同図(a)~(e)に示すヒートスプレッタの特徴は、ヒートスプレッタのチップ搭載面と底面との電気的絶縁が完全に保たれ、両面とも半田付け可能で、しかも高熱伝導性(0.2W/℃・cm)、高耐熱性(300℃以上)であることが挙げられる。

【 O O 4 4 】図2 (a), (b)に示すヒートスプレッタは、A I NやA I 2 O 3 のセラミックスに両面メタライズを施したものである。すなわち、同図(a)に示す第1のヒートスプレッタは、A I N(窒化アルミニュウム)31の両面にMo(モリブデン)やNi(ニッケル)の半田付け用のメタライズ32を施したものである。図2(b)に示す第2のヒートスプレッタは、A I 2 O 3 (酸化アルミニュウム(アルミナ))41の両に、MoやNiの半田付け用のメタライズ42が施されている。なお、A I NやA I 2 O 3 のセラミックスに代えて、他のセラミックスで構成してもよい。但し、上記の高熱伝導性及び高耐熱性を備えている必要がある。

【0045】図2 (c) に示す第3のヒートスプレッタは、Cu薄板(200~500μm) 51下に、高温半田(Pb含有量多い) 52を介して、両面にメタライズ 53を施したAl2 O3 層54を結合したものである。

【0046】図2(d)に示す第4のヒートスプレッタは、Cu(またはCKC、Mo)などの金属61にA1203などのセラミックス溶射により絶縁層62を形成し、その絶縁層62に半田付け可能にMoやNiのメタライズ63を施したものである。

【OO47】図2(e)に示す第5のヒートスプレッタは、AINまたはAI2O3のセラミックス71の両面に Cu^{α} ーストの印刷焼成によるCu厚膜($\sim500\mu$ m) 72を形成したものであり、このCu厚膜72により、ヒートスプレッタ2の熱抵抗や熱膨脹係数をコントロールすることができる。

【0048】上記第3、第4及び第5のヒートスプレッタの各例の通り、Cu薄板51、61やCu厚膜72をアセンブリ形成することにより、一層の低熱抵抗性を実現することが可能となる。この点について、図3を用いて具体的に説明する。

【0049】図3は、前記第3及び第4のヒートスプレッタの熱抵抗を示す図である。

【0050】上記図2(c)に示す第3のヒートスプレッタは、Cu51(厚さ1.0mm)、半田52(厚さ

0. 1 mm)、セラミックス54(厚さ0. 5 mm)、及び半田(ベース外部放熟器1に接合:厚さ0. 1 mm)とした例では、根元算で熱抵抗が0. 246(℃/W)となる。また、上記図2(d)に示す第4のヒートスプレッタは、Cu61(厚さ1. 0 mm)、セラミックス62(厚さ0. 5 mm)、及び半田(ベース外部放熱器1に接合:厚さ0. 1 mm)とした例では、熱抵抗が0. 219(℃/W)となる。これらの結果を第3の従来装置の熱抵抗値(0.951:図10(c)の底面接着方式)と比べると、放熱性がそれぞれ3. 86倍、4.34倍向上しているのが分かる。

【0051】このように、本実施形態では、ヒートスプレッタ2として、図2(a)~(a)に示すものを使用したので、チップ搭載面と底面との電気的絶縁を完全に保つことができ、しかも高熱伝導性(0.2W/℃・cm以上)且つ高耐熱(300℃以上)のパワー素子搭載用ヒートスプレッタを実現することができる。すなわち、高耐熱性であることから、Pb含有率90%以上の半田をチップ下のヒートスプレッタ2に使用することができるためTFT耐量が大きくなり、装置の信頼性が向上する。

【0052】さらに、ヒートスプレッタ2のチップ搭載面と底面との電気的絶縁を完全に保つことができるので、各ヒートスプレッタ2をベース外部放熱器1に直接半田付けすることが可能となり、チップ部10とベース外部放熱器1とは低熱抵抗で結合されることになる。さらに、ベース外部放熱器1は各パワー素子10と電気的に絶縁されていることから、ベース外部放熱器1を直接外気に晒すことも可能であり、高効率な冷却が行える。これにより、装置の放熱性が向上する。

【0053】また、チップ部10のヒートスプレッタ2には、高価なDBC基板や金属ベース基板等を使用せずAINやAI2 O3 等の安価な材料を使用し、しかも、周辺回路部20を安価なガラエポ基板等を使用したので、装置全体を低コストで作製することができ、しかも高出力なパワー素子をコンパクトにアッセンブリすることができる。

【0054】図4(a),(b),(c)は、本発明の第2実施形態に係るマルチチップモジュール半導体装置の構成を示す図であり、同図(a)は、樹脂封止前の状態を示す斜視図、同図(b)は樹脂封止した完成品を示す斜視図、及び同図(c)はその断面図である。なお、図1と共通する要素は同一の符号を付し、その説明を省略する。

【0055】本実施形態は、上記第1実施形態で示した本発明のマルチチップモジュール半導体装置に対し、入出カリードを含めてトランスファーモールド法による樹脂封止を施して、さらに標準パッケージ(外囲器)に収納したものである。

【OO56】すなわち、同図(a)に示すように、樹脂

封止前は、まだ、基板 1 と入出カリード部80とが一体となり、この入出カリード部80は、前記周辺回路部20の所定パッドにワイヤボンディングされている。樹脂封止前は、このような装置が複数の連なった状態となっている。

【0057】そして、トランスファーモールド法により 個々の装置が樹脂封止された後、切断工程にて切断処理 されると、同図(b),(c)に示すように標準パッケージ90から入出カリード80aが導出され、個々に分離された装置が完成する。

【0058】本実施形態では、コスト性及び生産性を一層向上させることが可能となる。

[0059]

【発明の効果】以上詳細に説明したように、第1の発明によれば、各パワー素子を、セラミックス系の絶縁層を有するヒートスプレッタを介して放熱板に半田付けによって実装するようにしたので、パワー素子と放熱板の電気的絶縁を完全に保つことができる。さらに、パワー回路部は高熱伝導性且つ高耐熱性となるため、パワー素子と放熱板とは低熱抵抗で結合でき、しかもTFT耐量が大きくなって装置の信頼性が向上する。

【0060】第2の発明によれば、上記第1の発明において、前記ヒートスプレッタの前記絶縁層は、熱伝導率が0.2W/℃・cm以上の高熱伝導性であり、且つ300℃以上の高耐熱性を有するAI2O3層またはAIN層で構成し、この絶縁層の上面及び下面に半田付可能なメタライズ処理を施すようにしたので、優れた熱伝導率、高耐熱性及び絶縁性を備えたヒートスプレッタを安価に作製することが可能となる。

【0061】第3の発明によれば、上記第1の発明において、前記ヒートスプレッタについて、熱伝導率が0.2W/℃・cm以上の高熱伝導性であり且つ300℃以上の高耐熱性を有するA12 O3 層またはA1N層で前記絶縁層を構成し、この絶縁層の上面及び下面側にCuペーストの印刷焼成によるCu厚膜を形成したので、優れた熱伝導率、高耐熱性及び絶縁性を備えたヒートスプレッタを安価に作製することが可能となると共に、一層の低熱抵抗性を図ることが可能となる。

【 O O 6 2 】第4の発明によれば、上記第1万至第3の 発明において、前記制御回路部は、プリント基板、セラ ミックス基板または金属ベース基板を用いて構成したの で、制御回路部を高密度に実現できるため装置全体を小 型化でき、しかも低コスト化が可能となる。

【0063】第5の発明によれば、上記第1万至第4の 発明において、トランスファーモールド法により外囲器 を成型するようにしたので、コスト性、生産性を一層向 上させることが可能となる。

【図面の簡単な説明】

【図1】本発明の第1実施形態に係るマルチチップモジュール半導体装置の構成を示す図である。

【図2】図1中のヒートスプレッタの具体的構成例を示す断面図である。

【図3】第3及び第4のヒートスプレッタの熱抵抗を示す図である。

【図4】本発明の第2実施形態に係るマルチチップモジュール半導体装置の構成を示す図である。

【図5】従来の一般的なHブリッジ・モータドライブ回路の回路図である。

【図6】図5に示すHブリッジ・モータドライブ回路の 等価回路図である。

【図7】従来のマルチチップモジュール半導体装置の第 1の構成例を示す断面図である。

【図8】従来のマルチチップモジュール半導体装置の第 2の構成例を示す断面図である。

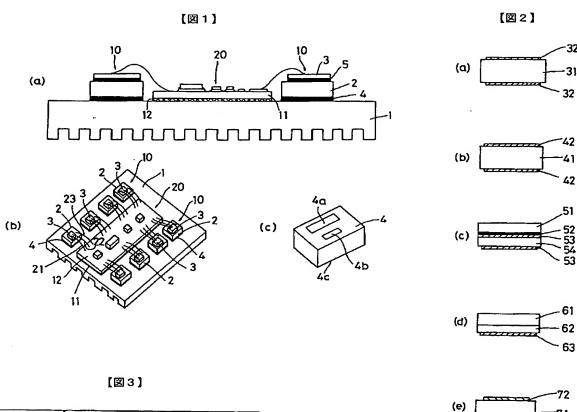
【図9】従来のマルチチップモジュール半導体装置の第 3の構成例を示す断面図である。

【図10】従来装置の問題点を説明するための図であ る

【図11】半田中のPb含有率とパワーサイクル耐量との関係を示すグラフである。

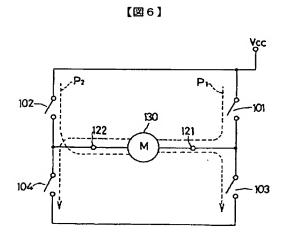
【図12】従来装置の問題点を一覧表示した図である。 【符号の説明】

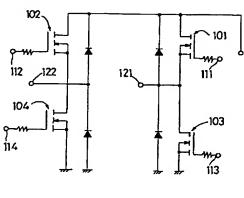
- 1 ベース外部放熱器
- 2 ヒートスプレッタ
- 3 パワー素子
- 4,5 半田
- 4 a ソース電極
- 4 b ゲート電極
- 4 c ドレイン電極
- 10 チップ部
- 11 ガラエポ基板
- 20 周辺回路部
- 21, 22, 23 ワイヤ
- 31 AIN (窒化アルミニュウム)
- 32, 42, 53 メタライズ
- 4 1 A l 2 O3 (酸化アルミニュウム)
- 5 1 Cu薄板
- 52 高温半田
- 62 セラミックス溶射による絶縁層
- 71 セラミックス
- 72 Cu厚膜
- 80a 入出カリード
- 90 標準パッケージ



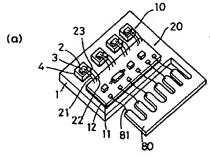
	第3のヒートスナトック	厚さ	第4のトーガッナ	厚さ
	Cυ	10	Cu	10
	半田	0.1	セラミックス	0.5
	セラミックス	0.05	半田	0.1
	半田	0.1		
-	7			
熟抵抗(°C/I)	0.246		0.219	

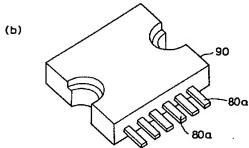
【図5】

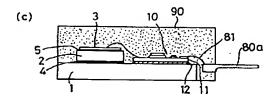




[図4]







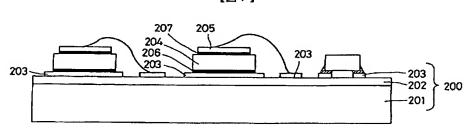
【図10】

(a)	部材	热伝寿率(1/C。ca)
	アルミニュウム	2.36
	F	4.03
	シリコン	1.57
	CITC	0.32
	半田	0-37
	タタコン系接着剤	0,0088
	金属基板樹脂純緑屬	0.035
	空化アルミニュウム	1.31
	セラミックス	0.30

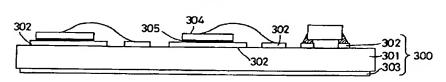
(b)	各種	銅	厚さ	CKC	厚さ	チッカアルミ	厚さ
		Сu	1.5	Сu	15	AIN	1.5
				コノール			
				Сп			
			-		<u> </u>		
		_	\vdash		<u> </u>		
	熟抵抗(℃/1)	0.037		0.469	\vdash	0,115	_

(c)	方式	在面接着方式	厚さ	底面半田付方式	厚さ
		Cu	1.0	CU	1.0
		Cu	0.1	出	0.1
		超影	0.1	把款 器	0.1
		アルミニュウム	1.0	Cu	1.0
	2.00	接着利	0.05	- 半田	0.1
	MEETIC (TC/Y)	0.961		0,367	

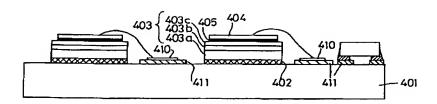
【図7】



[図8]

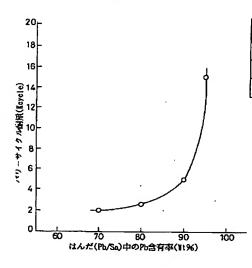


[図9]



【図11】

【図12】



項目	コスト	耐热 (チェア部)	化粉粉度	バングの 容易さ	熱抵抗 (放熱性)	ールな 耐熱性
第1の従来透顧(全国4-2共長)	中一篇	х	Δ	0	Δ∸0	ΔΟ
第2の従来装置(DBC基板)	高	0	Δ	0	0	0
第3の従来装置(部分全属基板)	小→中	х	0	Δ	х	Δ+0

it to the Certificate Holder, Insurer and occasionally, the Insured.

Thus it is seen that existing Certificate of Insurance systems result in a time consuming, unwieldy processes. Accordingly, it would be desirable to have a system which advantageously addresses the above described shortcomings.

BRIEF SUMMARY OF THE INVENTION

10 In accordance with the present invention, a system and facilitate the method are disclosed which issuance of certificates through use of a Web site, and which employs a single database of relevant information for both issuers and receivers of certificates. The disclosed system includes 15 interfaces and features for multiple parties that typically involved, including Certificate Holders, Producers, Insurers, and well as a Insured, as registration certification process for Certificate Holders with numbers of certificates. The disclosed system includes 20 program logic providing control and security to the parties involved, allows and Certificate a Holder to obtain certificates directly from the disclosed Web site in a manner that is consistent with information regarding an Insured that is entered by a Producer associated with the Insured. The 25 levels of security and control may advantageously be tailored to individual Insured parties, and to specific types of coverage to be listed on the resulting certificates.

The disclosed system further includes a sophisticated interface to Producers which conveniently and efficiently enables a Producer to describe the appropriate approval process to be imposed on certificate requests for individual insured parties, and/or to specific types of coverage to be certified. Moreover, the certificate information database maintained by the disclosed system is advantageously accessible to parties that are involved in either incoming or outgoing certificates.

10 More specifically, during operation of the disclosed system, a Producer is enabled to set certificate information for an Insured party through the disclosed Web site, and to establishes security and levels of acceptance and tolerance concerning the extent to which certificates may be 15 and/or approved. The Insured party may direct requesting parties, such as Certificate Holders, to the disclosed Web The Insured may further provide the certificate requester with one of potentially several passwords associated with the Insured. When the Certificate Holder subsequently 20 initiates certificate request а on the Web site, Certificate Holder may be required to enter both the name of the Insured party and a password. Depending on the specific password entered, the Web site provides access to different sets of information regarding the Insured, and may further 25 implement different security and/or approval mechanisms with regard to the requested certificate. The specific security features employed by the disclosed Web site may further be determined in response to information obtained from the

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Certificate Holder during the certificate request process. For example, in response to selection by the Certificate Holder of the Insured by name, together with the password entered by the Certificate Holder, the disclosed Web site provides a series of questions regarding the requested certificate to the Certificate Holder. The answers provided by the Certificate Holder are used to define information to be printed on the certificate, as well as to determine specific certificate approval process to applied. The disclosed system subsequently obtains approval the requested certificate, and enables the Certificate Holder to either print the resulting certificate, or have it emailed. Contingent on information provided by the relevant Producer, copies of the certificate may also be immediately emailed to the relevant Producer, Insured and/or Insurance Company(s). Alternatively, reports of issued certificates may be sent periodically to Producers, Insureds and/or Insurance Company(s).

In a preferred embodiment, the disclosed system is 20 configured such that selections made by the Producer in setting up an Insured, control the selections that appear as options to the Certificate Requestor, thus preventing the Requestor from selecting unauthorized options. Moreover, a preferred embodiment of the disclosed system is configured 25 such that the selections made by the Producer in setting up an Insured and the selections made by the Certificate Requester drive computer program logic to determine the wording on the Certificate to prevent issuance of a certificate with

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unauthorized information and/or unauthorized insurance conditions. Additionally, a preferred embodiment the system is configured to further prevent unauthorized information and/or unauthorized insurance conditions by preventing the Certificate Requestor from entering certain key words or phrases that otherwise could appear on the Certificate.

In a preferred embodiment, the disclosed system may be configured such that explicit approval by the Producer, or the Producer's delegate, of a particular type of certificate for a particular Insured party is required before printing of the certificate by the Certificate Holder. In such an embodiment, after the Certificate Holder enters the relevant information in the form of answers to generated questions, an electronic message may, for example, be sent to the relevant party requesting that the certificate be approved or not approved by return email to the Web site. In one embodiment, the email sent to the relevant party includes a hyperlink to a copy of the proposed certificate for review by the relevant party. The relevant party may then examine the requested certificate, and determine whether the certificate should be approved. the relevant party approves the certificate, then the certificate is automatically sent to the Certificate Holder, for example through electronic mail. If the certificate is approved, then the relevant party may contact Certificate Holder to expressly indicate that the requested certificate was not approved.

In a further aspect of the disclosed system, an Incoming Certificates Process may be employed by a Certificate Holder

(, ,)

that is requesting and processing large numbers of certificates. The disclosed Incoming Certificates Process enables Producers to verify insurance requirements that were previously established by a Certificate Holder, and for a certificate to be immediately issued to the Certificate Holder. If the relevant coverage is subsequently determined to not meet the requirements entered by the Certificate Holder, then such deficiency is noted and reported necessary.

The certificate information database of the disclosed system may further serve as a convenient storage mechanism for certificate information for both Certificate Holders and Producers.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The invention will be more fully understood by reference
to the following detailed description of the invention in

conjunction with the drawings, of which:

Fig. 1 shows an embodiment of the disclosed system in
which a Web site is used in connection with a certificate
information database to provide services to a number of client
systems;

Fig. 2 is a flow chart illustrating steps performed by a producer to set up information regarding an insured party in an illustrative embodiment;

Fig. 3 is a flow chart illustrating steps performed by a certificate requester to request a certificate in an illustrative embodiment:

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- Fig. 4 is a flow chart illustrating steps performed by a certificate holder requester to register a certificate request and for a Producer to verify the registration for the incoming certificate process;
- Fig. 5 is a representative user screen for signing in a Producer;
 - Fig. 6 is a representative user screen for determining a Producer option;
 - Fig. 7 is a representative user screen for obtaining the identification information for an Insured party;
 - Fig. 8 is a representative user screen for obtaining the level of security to be associated with an Insured party;
 - Fig. 9 is a representative user screen for obtaining contact and approver information to be associated with an Insured party;
 - Fig. 10 is a representative user screen for obtaining general liability policy information and selecting options to be provided to the certificate Requestor to be associated with an Insured party;
- Fig. 11 is a representative user screen for obtaining automobile, workers' compensation and excess or umbrella policy information and selecting options to be provided to the certificate Requestor to be associated with an Insured party;
- Fig. 12 is a representative user screen for adding a
 25 permanent record for any other type of insurance, obtaining
 policy information about that type of insurance and selecting
 options to be provided to the certificate Requestor to be
 associated with an Insured party;

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- Fig. 13 is a representative user screen for obtaining the identities of insurance companies to be associated with the aforementioned insurance types and an Insured party;
- Fig. 14 is a representative user screen for obtaining contact information and providing delivery instructions for all of the four Parties associated with the certificate to be associated with an Insured party;
- Fig. 15 is a representative user screen for obtaining the identity of an Insured party from whom a certificate is being requested;
- Fig. 16 is a representative user screen for obtaining information regarding the party requesting a certificate;
- Fig. 17 is a representative screen for the Requestor to provide instructions on the type of insurance, conditions to the types of insurance selected, the term of the relationship, the cancellation condition and a description of the activity;
- Fig. 18 is a representative user screen for obtaining delivery instructions and further informational needs of the certificate; and
- Figs. 19-21 are tables illustrating the logic used to process the contents of a remarks field.

DETAILED DESCRIPTION OF THE INVENTION

All disclosures of provisional patent application serial number 60/163,615, filed November 4, 1999, and entitled "Internet Insurance Certificate System," are hereby incorporated by reference herein.

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The disclosed system for issuing certificates of insurance, and managing certificate of insurance related information, may be implemented through a Web site on the World Wide Web. For example, as shown in Fig. 1, client machines 10 effect transactions to a Web server system 12 using the Hypertext Transfer Protocol (HTTP), which is a known application protocol providing users access to various types of files (e.g. text, graphics, images, sound, video, etc.) using a standard page description language known as Hypertext Markup Language (HTML). A Web page is a document that is accessible over the Web, and that is typically identified using Uniform а Resource Locator (URL). Accordingly, requests for Web pages through an HTML-compatible browser (e.g. Netscape Navigator or Microsoft Explorer) executing on one of the client machines 10 generally involve specification of a requested Web page by that Web page's URL. The requesting one of the client machines 10 receives, in return, a document or other object formatted according to HTML. A collection of Web pages and/or other documents or programs supported on a Web server or servers, such as the server cluster 12, is sometimes referred to as a Web site.

In a preferred embodiment, and as shown in FIG. 1, the Web server system 12 includes a Web site, Web-accessible computer program logic coding and a certificate information database. Thus the Web server system 12 provides a Web-based application program accessible by the client systems 10 over the World Wide Web 11. As it is generally known, the client

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systems 10 typically include a suite of conventional Internet tools, including a Web browser, operable to access and obtain services from servers connected to the Web 11. Various known Internet protocols are used in connection with the services provided by servers within the Web server system 12. Thus, for example, browsing may be provided using the Hypertext Transfer Protocol (HTTP), which provides users of the client systems 10 access to multimedia files, including files written in the Hypertext Markup Language (HTML).

For purposes of illustration, a representative one of the client systems 10 may be a personal computer, notebook computer, Internet appliance or personal computing device (e.g. a PDA), that may, for example, be based on one or more x86-, PowerPC®, or RISC type processors. An illustrative system may include an operating system Microsoft Windows or Microsoft Windows CE. As noted above, each client system may include a suite of Internet tools including a Web browser, such as Netscape Navigator Microsoft Internet Explorer, that may have a Java Virtual Machine (JVM) and/or support for application plug-ins or helper applications.

Further for purposes of illustration, a representative Web server system 12 is based on an Intel i686 central processing unit (CPU), and includes an associated memory for storing programs executable on the CPU. The Web server system 12 further runs the Linux operating system and the Apache Web server program. Various communication links may be used to connect to the Web server system 12, such as a Digital

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Subscriber line or T1 connection. The illustrative Web server system 12 of Fig. 1 is further configured to allow some restricted to access the data for the convenience administrators and preferred users, but can be completely isolated to a Common Gateway Interface (CGI) of the computer program logic coding within the server system 12. illustrative embodiment of Fig. 1, the CGI is used by the Web server program within the Web server system 12 requests received from the client systems 10 to the computer program logic within the Web server system 12, and to receive data back to forward to the client systems 10. Accordingly, when a user of one of the client systems 10 fills out a form on a Web page provided by the Web server system 12, and sends it in, the Web server program within the Web server system 12 passes the form information to associated computer program logic code executing on the Web server system 12 processes the data, and that may send back a confirmation, rejection or error message.

Further during operation of the illustrative embodiment 20 shown in Fig. 1, permission to access the data within the certificate information database is generally denied to other machines. Users of the client systems 10 define IDs and passwords that are used to enforce limited access to data and functionality within the Web server system 12. In one 25 embodiment, the certificate information database within the Web server system 12 is based on the Kdb database provided by Systems, Inc. K is the language inherent Accordingly, in such an embodiment, the programming language K

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is used to implement the computer program logic associated with the disclosed system executing on the Web server system 12. Other database technologies, such as Sybase, Sequel Server and Oracle, as well as other programming languages may be used alternatively. In the illustrative embodiment of Fig. 1, the computer program logic code communicates with the CGI and the Web server program within the Web server system 12, and the computer program logic code further communicates via inter-process communication to the Kdb data. The Kdb RDBMS software provides the standard security mechanisms of SQL/92, and more. The input from HTML forms uses encoded values to reassure the CGI code that the user has logged on properly.

As illustrated in Fig. 1, the parties typically involved with insurance certificates access the components of the Web server system 12 through the client systems 10. In particular, Producers, Insureds, Certificate Holders and Insurers use the client systems 10 to access the Web server system 12 over the World Wide Web 11.

The disclosed system allows three types of parties to issue what are referred to as "Outgoing" certificates with various levels of security. In addition, the present system includes a separate respective process, implemented within the computer program logic executing on the Web server system 12, for each of the parties permitted to issue an Outgoing certificate. A fourth process is provided by the disclosed system for "Incoming" Certificates. These four processes operate as follows:

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- 1. Producer Process (Outgoing Certificates): The disclosed system enables Producers to add or change information on-line related to a certificate in the certificate information database through a Producer process. The Producer Process also allows the Producer to issue certificates on-line.
- 2. Insured Process (Outgoing Certificates): The disclosed system includes an Insured Process through which an Insured can issue his or her own certificates on-line. The disclosed system includes security features which prevent the Insured from issuing a certificate outside the scope of the applicable security policy.
- 3. Certificate Holder Process (Outgoing Certificates): The Certificate Holder Process of the disclosed system enables a Certificate Holder to issue their own certificates on-line and immediately. The disclosed system provides a higher level of security in connection with the Certificate Holder Process, preventing the Certificate Holder from accessing unauthorized information and from adding unauthorized conditions to the certificate.
- 4. Incoming Certificates Process: The Incoming Certificates Process of the disclosed system enables Producers to verify previously established insurance requirements and for a certificate to be immediately issued. If the relevant coverage does not meet the requirements the deficiency is noted and reported.
 - 5. Reports can be generated and downloaded for the Certificate Holder, Insured, Producer and Insurer(s). Each of the respective parties are only allowed information associated

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with the party. These reports can be used for many purposes including generation of the obligatory cancellation notifications and for claim adjustment.

Each one of the above described processes is accessible to the appropriate party through the Web site as accessed using one of the client systems 10. Fig. 2 illustrates steps performed with regard to the Producer Process. At step 30, a Producer registers or signs in to the disclosed system through the Web site provided by the Web server system 12 shown in Fig. 1. Signing in by a Producer at step 30 may include entering a Producer ID and associated password for security and verification purposes.

At step 32, the Producer selects from a number of option which are presented in a display screen. The Producer may, at step 32, select an option from a display screen which enables the Producer to set-up information related to an Insured party. Other options that may be presented to a Producer include revising an Insured Party, revising the registration information of the Producer, reprinting a certificate, and/or creating an attachment.

As a result of selecting the option for setting-up an Insured party at step 32, at step 34 the Producer enters identification information related to the Insured party being set up. Other information which may be entered at step 34 includes information relating to removal of the words "endeavor to" from the cancellation clause of certificates associated with the Insured party, and/or inclusion of attachments with the Insured's certificates.

At step 36, the Producer selects the level of security to be associated with the Insured party's certificates in general. The levels of security that may be selected at step 36 include:

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Unsecured and open to the general public: This security level is appropriate for an Insured party with a large volume of certificates and certificates which are routine and do not convey any or only limited rights to the Certificate Holder.

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Password required to enter the system: This security level requires either the Producer or the Insured to provide the appropriate password to the Certificate Holder. A field is presented to the Producer at step 36 for entry of the password into the system.

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Approval required: This security level does not require a password, but the Certificate Holder will not receive the certificate until it is approved by either a first or second contact, as established by the Producer. After a Certificate Holder enters the certificate information, the system sends electronic mail to the contacts for approval of the certificate.

Password and approval required: This security level requires both a password to access the system, and approval of any requested certificates.

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Further at step 36, the Producer may enter a password for accessing the system that the Insured and the Producer or Broker are to provide to anyone who wishes to use the system to request a certificate associated with the Insured. The producer may further enter a password at step 36 that is to be used only by the Producer to produce unique certificates, as well as a password to be used by the Insured to obtain reports regarding certificate activity relating to the Insured.

At step 38, the Producer enters contact and approver information associated with the Insured. The information entered by the Producer at step 38 may include electronic mail addresses of any approvers, so that the disclosed system may seek approval for any requested certificates electronic mail. Contacts provided at step 38 will also be displayed on the screen while a Certificate Holder uses the disclosed system, so that the Certificate Holder can contact them if they have any questions. Contacts entered at step 38 also may be designated for inclusion in any certificate regarding the Insured.

The Producer enters insurance policy information regarding the Insured at step 40. Further at step 40, the Producer is presented with a preferred wording for General Liability Additional Insureds, which may be overridden by the Producer. For example, the default preferred wording provided by the system may be as follows:

"ABC Corporation (the Certificate Holder) is added as an Additional Insured for General Liability, but only with

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respect to operations performed on their behalf and due to the negligence of XYZ Corporation (the Insured)."

If the Producer desires a different default wording, wording may be entered at step 40. Further at step 40, the Producer may make selections which allow the Certificate Holder to perform certain additions to certificates, and to indicate whether approval should be sought when such are additions are present in a given certificate. For example, at step 40 the Producer may indicate whether Certificate Holders may be added as additional insured, and whether approval must obtained before issuing а certificate in which Certificate Holder has been added as an Additional Insured. Similarly, at step 40, the Producer may indicate that lessors may be added as Additional Insured, and whether approval be sought for certificates in which a lessor has been added as an Additional Insured. In addition, the Producer may indicate that vendors may be added as Additional Insured, and whether approval must be sought for certificates in which a vendor has been added as an Additional Insured.

At step 42, the Producer selects any attachments which are to be associated with the Insured, and at step 44 the Producer enters insurance company information relating to the Insured. The Producer is further enabled to enter remarks at step 42 which are to be included in each certificate issued for the Insured, unless they are overridden by the Certificate Requester who has special privileges to issue certificates entitled "special certificate". At step 44, the Producer

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selects the Insurance companies associated with the Insured, and at step 46, the Producer enters in contact information describing parties that are to be provided with information regarding certificates issued to the Insured. certificate information may be provided in response to individual certificates being issued, or periodically, as selected by the Producer at step 46.

Fig. 3 is a flow chart illustrating steps performed in connection with requesting a Certificate of Insurance using the disclosed system. At step 60, a certificate requester, such as a Certificate Holder, indicates the Insured party for whom a certificate is to be requested. In addition, the requester further enters any password associated with the indicated Insured at step 60. The disclosed system verifies that any password entered at step 60 is correct, and only allows access to information regarding the indicated Insured in the event that the requester has provided any necessary password.

At step 62, the requester enters their name and address information as it is to appear on the requested certificate. The requester then selects the type of insurance to be certified by the certificate at step 64, as well as the relevant policy conditions at step 66. A project description is then provided by the requester at step 68. The requester enters delivery instructions at step 70, which may indicate that the requested certificate is to be printed by the requester, or that the certificate is to be saved to a file, or that the certificate is to be send electronically either to

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the email address of the requester, or another email address. requester indicates that the information for the certificate is complete and that the certificate should be created at step 72. If there is no approval associated with requested certificate, then the disclosed immediately creates the certificate. Otherwise, at step 74, appropriate approval is sought. For example, disclosed system may send an electronic copy, or a link to an electronic copy, of the requested certificate to one or more approvers that were provided by the Producer that entered information regarding the Insured. The approvers may then information on inspect the certificate, and follow predetermined approval procedure. Such an approval procedure may consist of simply sending an electronic reply to the approval request message. In а further illustrative embodiment, the approval request message includes either a copy of or link to a modifiable or editable version of the In such an embodiment, the approver requested certificate. may make any predetermined and necessary changes to certificate prior to approving it. At step 74, the disclosed system receives the requested approval, and issues the requested certificate at step 76.

Many firms must keep track of the certificates that they ask for and receive. The disclosed system enables an Insured party to allow a party that needs proof of insurance, such as a Certificate Holder, to obtain a certificate directly from the Web site on the Web server system 12 of Fig. 1. This feature enables the Certificate Holder to register their needs

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and then have the Insured's Producer verify the registration. Once verified, the certificate is issued. This process adds the Incoming certificate to the same database as Outgoing certificates which eliminates the need for the Insured and Producer to issue the typical Outgoing certificate and yet reports can be generated by all four parties combining Incoming and Outgoing issued certificates. The through which this verification occurs is referred to as the Incoming Certificate process, the steps of which are illustrated in Fig. 4.

As shown in Fig. 4, the first step 90 of the Incoming Certificate process is for a Certificate Holder to register their insurance needs. The Certificate Holder enters its Name, Address, email, etc., as well as a Job Description User ID and password. The Job Description User ID is then employed to distinguish one project from another. Next, at step 94, the Certificate Holder registers their insurance requirements, for example by filling out an electronic form. For example, the Incoming Certificate Holder fills in fields at step 94 which indicate whether General Liability and/or Auto insurance are required, what liability limits are required, whether other types of insurance are required, any additional text that must be included on the certificate, and whether or not "endeavor to" language is to be included on the certificate.

The information provided in steps 90-94 are then used by the disclosed system to generate a template for the Insured's Producer to verify. The Certificate Holder instructs the Insured to advise their Producer to access the site, and to

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provide the identify of the Certificate Holder and associated password to the Producer as well. This step is illustrated by step 96 in Fig. 4.

When the Producer subsequently accesses the disclosed system at step 100, the disclosed system asks the Producer to verify that the Producer has previously registered by entering the Producer's User ID and password. If not registered, the Producer is required to do so. Once Producer registration is verified or a new Producer registration is made, the Producer enters the identity of the previously registered Certificate Holder together with the associated password. The Producer is then asked if they have previously set-up the Insured by selecting the Insured from an Insured look-up of previously If an existing set-up Insureds associated to that Producer. Insured is selected by the Producer, the computer program logic code of the disclosed system will produce a display with the following:

- Producer name and address.
- 20 Insured name and address.
 - Coverage details entered by the Certificate Holder in red.
 - Companies, Company Letters, Policy Number, Effective Date and Expiration Date but only for GL, AL, WC and EX if there is a match between the Certificate Holder's template and the Insured information already entered in the system.
 - Certificate Holder name and address.

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If there is no match of an Insured, the Producer enters insurance policy information at step 102 and insurance companies at step 104. A distribution screen is presented at step 106, into which the Producer may select and/or enter indications of who will receive a certificate.

At step 108, the Certificate Holder is automatically issued the certificate. It is sent as an email attachment. The email indicates whether the Producer has revised the coverage details. If the Producer has revised the coverage details, the email lists the details that have been revised. The Insured's and Producer's name, address, contact, telephone and email information are included in the email.

Figs. 5 through 14 are user screens provided by the Producer Process to enable a Producer to enter or change 15 information regarding Fia. 5 an Insured. shows illustrative user screen 148 through which a Producer may sign in by providing a user ID associated with the Producer in a field 150 and a password associated with the Producer in a field 152. The user screen 148 further is shown including a 20 button 154 through which a Producer may create a new account. Fig. 6 shows an illustrative user screen 160 including a of selectable options for a Producer that previously signed onto the system. In particular, a set-up insured button 162 is shown.

25 The set-up process for an insured is further illustrated by the user screen 170 of Fig. 7, which enables a Producer to enter information regarding an Insured into the disclosed system. The user screen 170 further provides a check box 174

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which enables the Producer to indicate that the words "Endeavor To" may be removed from the cancellation clause of certificates issued for the Insured, and a check box 176 which enables the Producer to indicate that attachments may be included with such certificates.

Fig. 8 illustrates a user screen 180 in which a Producer may indicate the level of security to be associated with an Insured. As shown in Fig. 8, the Producer may select a first check box 182 indicating that certificates for the Insured are to be unsecured and open to the general public, a second check box 184 indicating that a password is required to access certificates for the Insured, a third check box 186 indicating that approval is required for certificates for the Insured, a fourth check box 188 indicating that both password protection and approval are to be required. A field 190 is provided for entry of a password to be used by someone that is requesting a certificate for the Insured. A field 192 is provided to receive a password to be used by the Producer to produce unique certificates, and a field 194 is provided to receive a password that is to be used by the Insured to obtain reports regarding certificate activity related to the insured.

Fiq. shows illustrative an user screen 210 receiving contact information from a Producer regarding an Insured party. The user screen 210 enables a Producer to enter information regarding a first contact 212 and a second contact 214. Such contact information may be displayed on the screen when a Certificate Holder is using the disclosed system with regard to certificates of the Insured. Such contacts may

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further be used during any necessary approval process for certificates associated with the Insured. A number of check boxes 216 are further provided which enable the Producer to indicate whether or not the contact information should be printed on certificates of the Insured, and if so, where.

Fig. 10 is an illustrative user screen 220 which enables Producer to set-up insurance policy information for A general liability information section 222 includes Insured. check boxes and text entry fields related to the type of insurance and limitations of coverage to be associated with the Insured. A text entry box 224 is further provided to enable the Producer to enter override language to be used as a substitute for the general liability additional default language used on the certificates. A pair of check boxes 226 enables the Producer to indicate whether Certificate Holders mav be added as Additional Insured on the certificates, and whether approval is required for such certificates. A pair of check boxes 228 is provided to enable the Producer to indicate whether Lessors may be added as Additional Insured, and whether approval is required for such Finally, a pair of check boxes is provided to certificates. enable the Producer to indicate whether Vendors may be added as Additional Insured, and whether approval is required for such certificates.

In Fig. 11, an illustrative user screen 232 for obtaining insurance policy information from a Producer regarding an Insured when the Producer is setting up information regarding the Insured. The user screen 232 is shown including an

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automobile coverage section 234, a worker's compensation section 236, and an excess or umbrella section 238. Three check boxes 237 enable the Producer to indicate whether Certificate Holders may be added as Additional Insured and Loss Payee on the certificates, and whether approval is required for such certificates.

Fig. 12 shows an illustrative user screen 250 which includes a text field 252 for entry by the Producer of a line of insurance to be associated with an Insured when the Producer sets up information regarding the Insured. Another text box 254 enables the Producer to enter further information regarding the line of insurance listed in the text field 252. Four check boxes 253 enable the Producer to indicate whether Certificate Holders may be added as Additional Insured, Loss Payee and Mortgagee on the certificates, and whether approval is required for such certificates. The information provided regarding such an additional line of insurance through the user screen 250 may then be automatically included within certificates issued for the Insured.

A remarks box 256 is further shown in Fig. 12. Text inserted by the Producer within remarks box 256 will appear on every certificate issued for the Insured, except in the case where the Certificate Holder requests a Special Certificate.

The illustrative user screen 270 shown in Fig. 13 is used to receive insurance company information regarding an Insured from a Producer, for example, when the Producer is setting up information regarding the Insured. A list of insurers may be entered by the Producer into the text fields 272 for this

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purpose, together with indication of the type of insurance that they provide in one or more of the check boxes 274.

Fig. 14 includes an illustrative user screen 290 used to obtain notification information from a Producer, regarding an A number of text boxes 292 are used to enter contact name and email addresses for a number of insurance companies associated with the Insured. The check boxes 294 further enable the Producer to indicate a specific type notification for each party, such as individual or immediate notification, monthly reports, quarterly reports, or none.

Figs. 15-18 are user screens provided by the Certificate Holder Process in order to obtain information from Certificate Holder that is requesting a certificate. Fia. 15 shows an illustrative user screen 300 for obtaining identity of the Insured in a text box 302, as well as any necessary password in the text box 304. Fig. 16 is a user screen 310 for obtaining information regarding the Certificate Holder during the process of requesting a certificate. The user screen 310 is shown including text boxes 312 for receiving company information regarding the Certificate Holder, and a text box 314 for obtaining the email address of the Certificate holder.

17 representative is а screen 318 for the Certificate Holder to provide instructions on the type of insurance, conditions to the types of insurance selected, the term of the relationship, the cancellation condition and a description of the activity. In particular, 318 includes a number of check boxes 320 through which

Certificate Holder may select the types of insurance to be printed on the certificate. The only check boxes that appear are selected by the Producer in the Insured Set-up to prevent issuance of a certificate with an erroneous type of insurance.

- A term of relationship section 322 enables the Certificate Holder to specify the duration of the relationship with the Insured. A pull down menu 324, containing information established by the Producer in the Insured Set-up process, provides a list of insurance options relating to General
- 10 Liability Additional Insured and Vendors. For example, the pull down menu 324 may allow the Certificate Holder to select one of the following options to be associated with the requested certificate:
- 15 Not Needed
 Additional Insured
 Lessor's Additional Insured
 Vendor's Endorsement
- 20 The pull down 326, menu containing information established by the Producer in the Insured Set-up process, provides a list of insurance options relating to Automobile Leasing and Financing. For example, the pull down menu 326 may allow the Certificate Holder to select one of following options 25 to be associated with the requested certificate:

Not Needed

Lessor's Additional Insured Loss Payee Additional Insured and Loss Payee

5 The pull down menu 328, containing information established by the Producer in the Insured Set-up process, provides a list of insurance options relating to Other Additional Insured, Loss Payee and Mortgagee. For example, the pull down menu 328 may allow the Certificate Holder to select one of the following options to be associated with the 10 requested certificate:

Additional Insured

Loss Payee

Additional Insured and Loss Payee

Mortgagee

Additional Insured and Mortgagee

A text entry box 329 is provided for entry of text to be 20 included within the Remarks section of the requested certificate. The disclosed system allows the requesting Certificate Holder to enter text free form into this box, and then checks the text that was entered based on the selections made from pull down menus 324, 326 and 328, as well as the 25 contents of the certificate information database. Certain key words are not permitted to be entered by the Certificate Holder to prevent issuance of an unauthorized or erroneous certificate. The computer program logic of the disclosed

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system further ensures that a nearly perfect sentence results from any modifications made to the free form text entered into the text entry box 329. In this way the disclosed system ensures that the sentence entered into the Remarks box on the actual certificate reflects the selections from the pull down menus 324, 326 and 328, as well as the data associations within the certificate information database to prevent the issuance of an unauthorized or erroneous certificate.

A user screen 330 shown in Fig. 18 includes a section 332 which enables the Certificate Holder to indicate how the created certificate should be issued or delivered, a preview button 334 which enables the Certificate Holder to preview the requested certificate without creating it, and an explanation text box for the Producer to enter in reasons why the previewed certificate is not acceptable to the Certificate Holder.

Figs. 19-21 illustrate the logic in the computer program of the disclosed system for processing the text entered into the remarks text entry box 329 shown in shown in Fig. 17. This logic prevents issuance of an unauthorized or erroneous certificate. In the tables shown in Figs. 19-21, the following rules apply:

CH = Certificate Holder

25 IN = Insured

W = Wording

D = Description from the text entry box 329

OT = Other Name

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W= either the standard wording or override wording on the General Liability Insured Form

OT = the name of the Other type of insurance

Other text strings contained within [] are literal text strings that are to be inserted in the resulting sentence. In the case where the Certificate Holder enters a period at the end of the text in text entry box 329, it is ignored to prevent two periods being generated at the end of the sentence in the remarks box of the certificate.

The table 350 in Fig. 19 describes actions taken in response to the selection by the Certificate Holder of one of the items listed in pull down menu 324 of Fig. 17. 356 of the table 350 correspond to the items within the pull down menu 324. The columns 352 and 354 indicate whether the text entry box 329 was left blank (column 352), or became nonblank (column 354) as a result of the Certificate Holder entering text. Accordingly, the appropriate action defined by the table 350 is described by the table entry found at the intersection of the applicable row with the applicable column. For example, in the case where the Certificate Holder has selected Lessor's Additional Insured from the pull down menu 324, and has left the text entry box 329 blank, appropriate entry in the table 350 is the entry 357, which indicates that the program code of the disclosed system will construct a complete sentence based on the following logic:

[CH] [is added as Additional Insured for General Liability but only with respect to premise leased to][IN][.]

The table 370 in Fig. 20 describes actions taken in response to the selection by the Certificate Holder of one of the items listed in pull down menu 326 of Fig. 17. 376 of the table 370 correspond to the items within the pull The columns 372 and 374 indicate whether the down menu 326. text entry box 329 was left blank (column 372), or became nonblank (column 374) as a result of the Certificate Holder entering text. Accordingly, the appropriate action defined by the table 370 is described by the table entry found at the intersection of the applicable row with the applicable column. For example, in the case where the Certificate Holder has selected Loss Payee from the pull down menu 326, and has left the text entry box 329 blank, the appropriate entry in the table 350 is the entry 377, which indicates that the program the disclosed system will construct a complete of sentence based on the following logic:

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[CH][is added as Loss Payee for vehicles leased to][IN][.]

The table 390 in Fig. 21 describes actions taken in response to the selection by the Certificate Holder of one of the items listed in pull down menu 328 of Fig. 17. The rows 396 of the table 390 correspond to the items within the pull down menu 328. The columns 392 and 394 indicate whether the

text entry box 329 was left blank (column 392), or became non-blank (column 394) as a result of the Certificate Holder entering text. Accordingly, the appropriate action defined by the table 390 is described by the table entry found at the intersection of the applicable row with the applicable column. For example, in the case where the Certificate Holder has selected Mortgagee from the pull down menu 328, and has left the text entry box 329 blank, the appropriate entry in the table 390 is the entry 397, which indicates that the program code of the disclosed system will construct a complete sentence based on the following logic:

[CH] [is added as Mortgagee.]

15 Those skilled in the art should readily appreciate that the programs defining the functions of the computer program code of the disclosed Web server system implemented in and delivered to a specific embodiment of the disclosed system in many forms; including, but not limited to: 20 information permanently stored on non-writable storage media (e.g. read only memory devices within a computer such as ROM or CD-ROM disks readable by a computer I/O attachment); information alterably stored on writable storage media (e.g. floppy disks and hard drives); or (c) information 25 conveyed to a computer through communication media for example using baseband signaling or broadband signaling techniques, including carrier wave signaling techniques, such as over computer or telephone networks via a modem. In addition,

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while the functionality of the bridge input/out modules and/or switching fabric may be embodied in computer software, these functions may alternatively be embodied in part or in whole using hardware components such as Application Specific Integrated Circuits or other hardware, or some combination of hardware components and software.

While the invention is described through the above exemplary embodiments, it will be understood by those of ordinary skill in the art that modification to and variation of the illustrated embodiments may be made without departing from the inventive concepts herein disclosed. Accordingly, the invention should not be viewed as limited except by the scope and spirit of the appended claims.

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CLAIMS

What is claimed is:

5 1. A server system connectable to a network, comprising:

a database of certificate of insurance related information;

program code operable to receive security information and insurance policy information regarding at least one insured party;

program code operable to store said security information and said insurance policy information regarding said at least one insured party in said database;

program code operable to receive a request for a certificate of insurance with regard to said insurance policy information;

program code operable to perform a security check with regard to said request for said certificate of insurance, said security check including at least one security procedure defined by said security information regarding said insured party; and

program code for issuing a certificate of insurance in response to said request in the event that said security check succeeds.

25

2. The server system of claim 1, wherein said security procedure requires a password to enter said server system in order to request a certificate associated with said insured

party, and wherein said security information includes said password, and wherein said security check includes program code for receiving a password from a certificate requester and comparing said received password with said password within said security information.

3. The server system of claim 2, wherein said security procedure requires approval of certificates associated with said insured party, wherein said security information indicates an approving party, and wherein said security check includes program code for sending an electronic message to said approving party, said electronic message including a proposed certificate to be issued in association with said insured party.

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4. The server system of claim 3, wherein said security check further includes program code for receiving a reply to said electronic message from said approving party, and for determining that said security check succeeds in response to said reply to said electronic message.

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5. The server system of claim 4, wherein said proposed certificate in said electronic message is modifiable by said approving party.

6. A method for issuing certificates of insurance over a computer network, comprising:

10

receiving security information and insurance policy information regarding at least one insured party;

storing said security information and said insurance policy information regarding said at least one insured party in a database of certificate of insurance related information;

receiving a request for a certificate of insurance with regard to said insurance policy information;

performing a security check with regard to said request for said certificate of insurance, said security check including performing at least one security procedure defined by said security information regarding said insured party; and

issuing a certificate of insurance in response to said request in the event that said security check succeeds.

- 7. The method of claim 6, wherein said security procedure requires a password to enter a server system in order to request a certificate associated with said insured party, and wherein said security information includes said password, and further comprising:
- receiving a password from a certificate requester; and comparing said received password with said password within said security information.
- 8. The method of claim 7, wherein said security procedure requires approval of certificates associated with said insured party, wherein said security information indicates an approving party, and further comprising sending an electronic message to said approving party, said electronic message

25

including a proposed certificate to be issued in association with said insured party.

9. The method of claim 8, further comprising:

5 receiving a reply to said electronic message from said approving party; and

determining that said security check succeeds in response to said reply to said electronic message.

10 10. The method of claim 9, wherein said proposed certificate in said electronic message is modifiable by said approving party.

11. A server system connectable to a network, comprising:

a database of certificate of insurance related information;

program code for receiving at insurance type information related to a requested certificate;

program code for receiving text to be entered into a 20 remarks box within said requested certificate; and

program code for forming a complete sentence reflecting said insurance type information, information stored in said database of certificate of insurance related information and said received text to be entered into a remarks box within said requested certificate, and for entering said complete sentence into said remarks box within said requested certificate.

12. The server system of claim 11, wherein said program code for forming a complete sentence is responsive to whether or not any text was entered into said remarks box within said requested certificate.

5

- 13. The server system of claim 11, wherein said program code for forming a complete sentence is responsive to a selected one of a plurality of items listed within a pull down menu.
- 10 14. The server system of claim 13, wherein said pull down menu is one of a plurality of pull down menus, wherein each of said plurality of pull down menus is associated with an insurance type.
- 15 15. A method for generating a certificate of insurance through a Web site, comprising:

receiving security information and insurance information regarding at least one insured party;

storing said security information and said insurance 20 policy information regarding said at least one insured party in a database of certificate of insurance related information;

receiving insurance type information related to a requested certificate;

receiving text to be entered into a remarks box within 25 said requested certificate;

forming a complete sentence reflecting said insurance type information, said information stored in said database of certificate of insurance related information and said received

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text to be entered into a remarks box within said requested certificate; and

entering said complete sentence into said remarks box within said requested certificate.

5

16. The method of claim 15, wherein said step of forming said complete sentence is responsive to a determination of whether or not any text was entered into said remarks box within said requested certificate.

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- 17. The method of claim 16, wherein said step of forming said complete sentence is further responsive to a selected one of a plurality of items listed within a pull down menu.
- 18. The method of claim 17, wherein said pull down menu is one of a plurality of pull down menus, wherein each of said plurality of pull down menus is associated with an insurance type.

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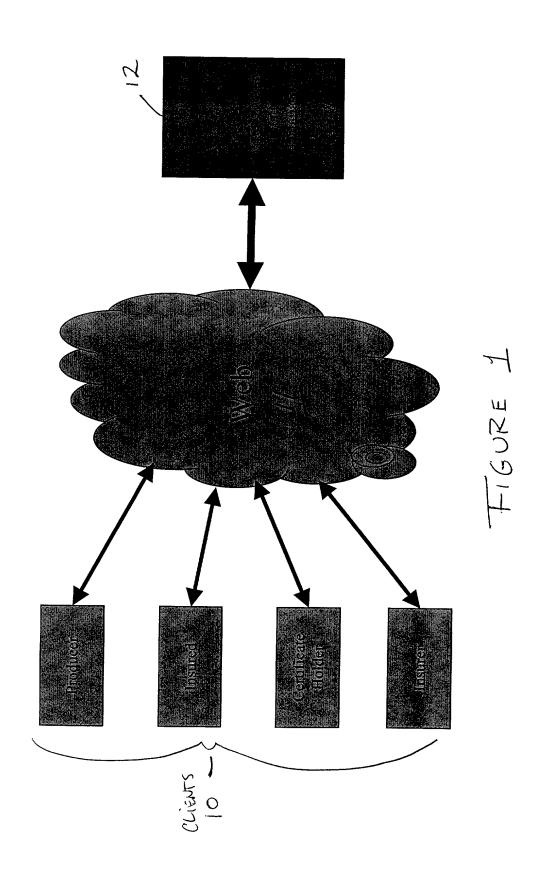
20

ABSTRACT OF THE DISCLOSURE

A system and method for issuing insurance certificates through a Web site using a single database of certificate information for both issuers and receivers of certificates. Interfaces and features are provided for Certificate Holders, Producers, Insurers, and Insured, and for parties who may receive large numbers of certificates. Control and security features enable a Certificate Holder to obtain certificates directly from the disclosed Web site in a manner that is consistent with information entered by a Producer associated with the Insured. The levels of security and control may be tailored to individual Insured parties, and/or to specific types of coverage to be listed on the resulting certificates. Producers may further indicate appropriate approval processes to be imposed on certificate requests for individual insured parties, and/or to specific types of coverage to be certified. certificate information database maintained disclosed system is advantageously accessible to parties that are involved in either incoming or outgoing certificates.

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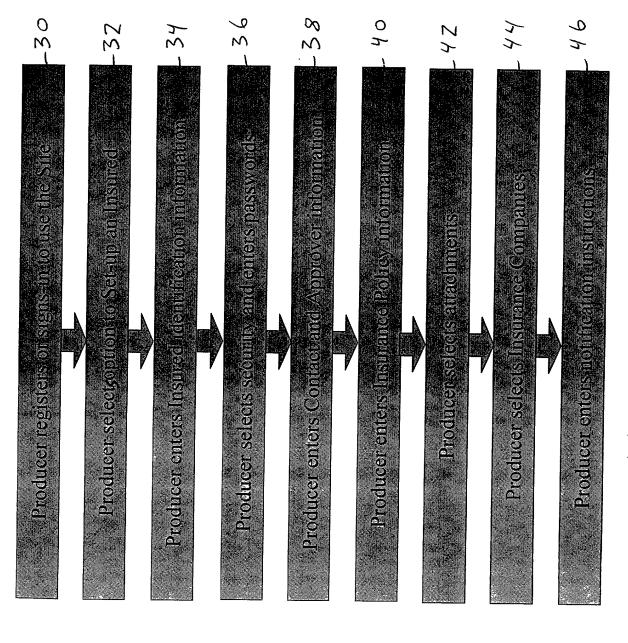


FIGURE 2

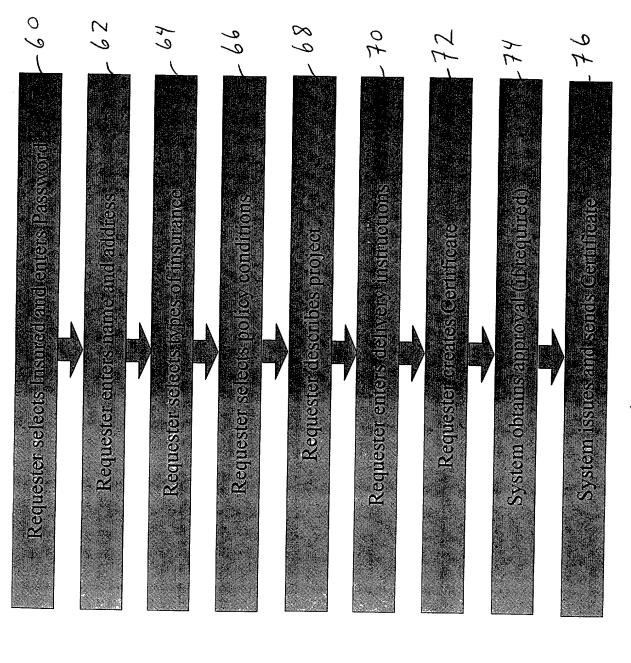
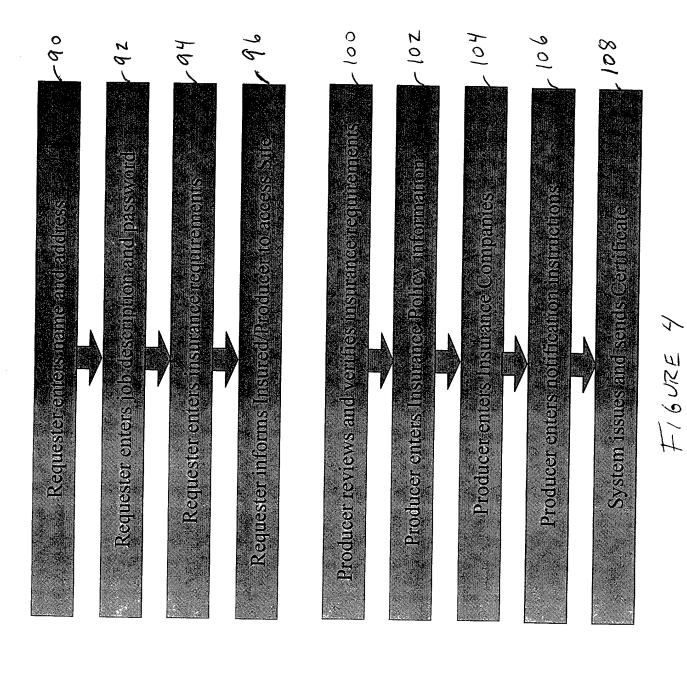


FIGURE S



t7/5

Producer Sign In

Click here if y	ou are creatin	g a new account.	-154
Or, if you have an account, please ent	ter your user	ID and password, below.	
User ID:		- 150	
Password:	****	-152	
Cancel (Home Page)			
Cancel (Home Page)			Sign In

148

ucer:	
1 "	er Options option below:
Set-up insured	Certificate reprint
Revise insured	Create attachment
Revise producer	Password maintenance

Return to Home Page

160

		Help	
Pr	oducer:		
Hall been all part of		Set-up Insured	
i.i.	Name:		
¥	Holding company:	(none) 🔻	
	Address 1:		
11	Address 2:)_(72	7
The state starts starts with the start starts start	City:	3	
	State/Province:	▼ Zip/Postal:	
	Country:		
C	Contact (First name):	(Last name):	
	Phone:	Fax:	
	E-mail:		
Ent mir		naximum number of days of cancellation allowed to notify the Certificate Holder. ximum 30	
☑		the words 'Endeavor To' from the cancellation clause. — 174 cachments with this Insured's certificates.	
		176	

/180

strongly recommend the first level be selected for general certificates. You can select an alternative level later for more sophisticated certificates. The levels are:
• Unsecured and open to the general public. This is for an Insured with a large volume of certificates and certificates that are routine and do not convey any or limited rights to the Certificate Holder.
Password required to enter the system. Either the Producer or Insured will provide the password to the Certificate Holder. Enter this password in the first password field, below.
Approval required. No password required, but the Certificate Holder will not receive the certificate until it is approved by either the first or second contact, as established below. After the Certificate Holder enters the information, the system will e-mail the contacts for approval.
Password and approval required.
Enter a password that the Insured and Broker will provide to someone who requests a certificate:
Enter a different password to be used only by the Producer to produce unique certificates:
Enter a different password to be used only by the Insured to obtain reports:

The contacts below are typically Producer cor the Insured and if so, Insured contacts are als Certificate Holder uses Certificate Exchange s be used in the approval process if security op	so acceptable. They will I should the Certificate Ho	be displayed on the screen when the older have a question. They will also
First Contact 2/2		Second Contact 214
1	Name	
	E-mail	
	Phone	
	Fax	
O Display name in the Producer's box on the printed certificate.	j	
O Display name in the Insured's box on the printed certificate.	\{-216	
Do not display this name.		
Cancel (Home Page)		< Prev Next >

10/21 FIGURE 10

Set-up Insur	red, Policy Data	x 220
Gener	al Liability 222	
	eral Liability	
Occurrence		
☐ Claims Made		
Owners' and Con	tractors' Protection	
General Aggregate Li	mit applies per:	
Policy O Project	ct O Location O None	
	Each occurrence	1,000,000
	Fire damage	
olicy number	Medical expense	
ffective (mm/dd/yyyy)	Personal and advertising agg.	1,000,000
xpiration (mm/dd/yyyy)	General aggregate	1,000,000
	Products and comp. oper agg.	1,000,000
	Troducto and comp. oper agg. [1,000,000
The system has preferred wording for Genera overridden. The preferred wording is: ABC Co Additional Insured for General Liability, but on behalf and due to the negligence of XYZ Corp Enter wording to override the preferred wordin with the Certificate Holder and ends with the In is added as an Additional Insured for General coveridation.	orporation (the Certificate Holder) of with respect to operations performation (the Insured). Ing. Please keep in mind the sente insured. Insured.	is added as an ormed on their
respect to operations performed on their beh negligence of	nalf and due to the	- 121
Approval Required. All of the check boxes the certificate. After the Certificate Holder emailed to the contacts previous entered, f	enters the information the certifica	issuing ite will be
☐ Allow Certificate Holders to be added a	as Additional Insured 23	26.
Approval Required		
1	al Insured Z	7.8

f 137

Δut	omobile 234
☐ Any Automobile	
☐ All Owned Auton	pobilos
☐ Scheduled Autor	
Hired Automobile	
☐ Non-owned Auto	modiles
LJ	
Policy number	Combined Single Limit 1,000,000
Effective (mm/dd/yyyy)	Bodily Injury (per person)
Expiration (mm/dd/yyyy)	Bodily Injury (per accident)
	Property Damage
Comprehensive	
Collision	
Collision	
☐ Allow Additional Insured	
☐ Allow Loss Payees	237
☐ Approval Required)
N. J	
workers	Compensation 736
Policy number	WC Statutory Limit O Other O
Effective (mm/dd/yyyy)	EL Each Accident 100,000
	EL Disease (Each Employee) 100,000
Expiration (mm/dd/yyyy)	EL Disease (Each Employee) 100,000 EL Disease (Policy Limit) 100,000
Expiration (mm/dd/yyyy)	EL Disease (Policy Limit) 100,000
Expiration (mm/dd/yyyy)	EL Disease (Policy Limit) 100,000
Expiration (mm/dd/yyyy)	EL Disease (Policy Limit) 100,000 or Umbrella
Expiration (mm/dd/yyyy)	EL Disease (Policy Limit) 100,000 or Umbrella Occurrence Claims Made
Expiration (mm/dd/yyyy) Excess	EL Disease (Policy Limit) 100,000 or Umbrella Occurrence Claims Made
Expiration (mm/dd/yyyy) Excess Retention/Deductib	EL Disease (Policy Limit) 100,000 or Umbrella Occurrence Claims Made
Expiration (mm/dd/yyyy) Excess Retention/Deductib	EL Disease (Policy Limit) 100,000 or Umbrella Occurrence Claims Made

FIGURE !

Other	
Unlike other certificate programs, Certificate Exchange allows you to perma insurance and it becomes part of the certificate. The type of insurance could Professional Liability, D & O, E & O, Motor Truck Cargo, etc. The Description information about the type of insurance, such as "All Risk of physical loss in Machinery." The limit descriptions can also be entered such as "Per Occurrence".	d be Property, Crime, on is additional ocluding Boiler and
Type of insurance:	_ 8 252
Further information about the type of insurance:	<u>^</u>
754 Description	Limit
Policy number	
Effective (mm/dd/yyyy)	
Expiration (mm/dd/yyyy)	
Allow Additional Insureds Allow Loss Payees Allow Mortgagee Approval Required	
Remarks	
Enter text to appear in the Remarks text box on the certificate. Any text inse on every certificate and can only be overridden if a certificate is issued using function.	erted here will appear g the Special Certificate
-	≥ 256

Cancel (Home Page)

< Prev

Next >

In order

Insured:

Set-up Insured, Insurance Companies

In order to facilitate entry of Insurance Companies, the program builds a database of Insurers for each Producer. Once the database is established, you need only click on the drop down arrow and select an Insurer. This may appear cumbersome in the beginning, but it will greatly speed up data entry once you establish your own Producer's list.

To select an Insurer not on your Producer's list, type in the first few letters of the Insurer's name in the small field and click on "Search". Then click on the Insurer you desire.

To add an Insurer not on the master list (above paragraph), type a "+" sign into the small field and click on "Search". Then place the cursor on the larger field and type in the name of the Insurer. To ensure data integrity, this should only be used after performing a careful search of the master list.

						Liab.	Auto	WC	Excess	Other		
First Insurer					V)	
Second Insurer					v						1	774
Third Insurer					▼						?	•
Fourth Insurer					▼				П			
Fifth Insurer					V						\mathcal{J}	
			S	Search								
Cancel (Hor	ne Page))					ſ	< Pre) ve	Vext >	= 1	

Gen

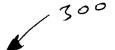
1290	Help
Insured:	
Sot-up Insured, Notification Instru	

Certificate Exchange will automatically e-mail certificates to individuals as listed below. There are 3 notification choices: Instant Notification (sent when they are requested by the Certificate Holders), Monthly Report, and Quarterly Report. If the Insurance Companies you selected require notification, please first enter the name and e-mail address of the underwriter who should receive certificates.

Contact Name

E-mail

Continental Cast	Jany Company .					}-292
Producer Insured First Contact Second Contact First Insurer Second Insurer Third Insurer Fourth Insurer Fifth Insurer	Dave Dagg Continental Casualty Company	Individual Notification O O O O O O	Monthly Report O O O O O	Quarterly Report O O O O O O O O O O O O O O O O O O O	None > O O O O O O O O O O O O O O O O O O O	-294



Help

Welcome to the Web-based Certificate of Insurance Program

In order to obtain a certificate of insurance, please complete the information below. You only need to enter the first few letters of the Insured s name. The Insured is the entity from whom you desire a certificate.

Producer	Insured:
Special Certificate Certificate	If you know the password for accessing this Insured, please enter it here. I you do not know the password, leave it blank, press "Start >" and you will be given instructions on the next screen.
Reprint FAQ	Password:
-	If you have used this system to retrieve certificates in the past, please enter your e-mail address here so that we can more easily identify you. (Do not enter your e-mail address if you have not used the system before.)
	E-mail:
	When you have finished, please click on the "Start >" button, below.

Start >

1 50

F. 6URE 15

nsured selected:			
Please enter the following	information as it is to appe	ear on the Certificate.	
Company Name:			
Address 1:			
Address 2:			
City:			
State/Province:	▼	Zip/Postal:	
Country:			
Contact (First name):		(Last name):	
Phone:		Fax:	
or identification and deli	very purposes, please enter	. vour o-mail addroso	
		your e-mail address.	

F16URE. 16

	Insured:
	You must select at least one type of insurance (from the first set of checkboxes).
	Please select the types of insurance to be printed on the Certificate.
	☐ General Liability ☐ Automobile
3 2	☐ Workers' Compensation ☐ Excess Cancellation Days (between 10 and 30): 10
/	☐ Transit Insurance Condition: Standard Cancellation ▼
	Enter the years and months you estimate you will do business with the Insured: Years Months General Liability Additional Insured and Vendor's: Not needed Automobile Leasing and Financing Not needed
	Automobile Leasing and Financing Not needed
	Other Additional Insured, Loss Payee and Mortgagee Not needed 🔻 🔫 3 7 8
	In the field below describe the project, or if you are a lessor list the location(s), or if you are an automobile lessor or loss payee list the vehicle(s). If there are many locations or many vehicles, leave the field blank. If the certificate is for vendor's coverage, please also leave blank. Please click on help for further instructions.
	click on nelp for further instructions.

F161RE 17

Help
nsured:
create and obtain your certificate (you may select more than one option):
Print the certificate or save the certificate to file.
☑ Send the certificate to my e-mail address:
☐ Send the certificate to another e-mail address:
Create
ou may preview the certificate for accuracy (this does not create the certificate). If it is nacceptable, you may change the information that you have entered by clicking on the < Prev" button at the bottom of the page. Preview 334
the certificate is still unacceptable, please explain why in the box below and then click Insufficient". Your message will be sent to the appropriate contact for revision and then -mailed to you.
<u>1</u> 33€
Insufficient
Cancel (Home Page) (all data will be lost) < Prev

F, 6,17 E 18

	352	354)
General Liability Additional		
Insured and Vendors	Blank	Non Blank
Not Needed		[This certificate only applies to][D][.]
Additional Insured	[CH][W][IN][.]	[CH][W][IN][for][D][.]
Lessor's Additional Insured	[CH][is added as Additional Insured for General Liability	[CH] [is added as Additional Insured for
E in war	but only with respect to premise leased to][IN][.]	General Liability but only with respect to
Vendors Endorsement	[CH][is added as Additional Insured for General Liability su	premise located][D][.]
77	{Blank}[][Vendor's Endorsement.]	loject to the [{bload Form}{Limited Form}
The field there were the first the f	3503	357

F16URE 19

	372	374
	1	1
Automobile Leasing and Financing	BLANK	NON BLANK
Not Needed		[This certificate only applies to][D][.]
Lessor's Additional Insured	[CH][is added as Additional Insured for vehicles leased to][IN][.]	[CH][is added as Additional Insured for][D][.]
Loss Payee	[CH][is added as Loss Payee for vehicles leased to [IN][.]	[CH][is added as Loss Payee for][D][.]
Additional Insured and Loss Payee	[CH][is added as Additional Insured and Loss Payee for vehicles leased to][IN][.]	[CH][is added as Additional Insured and Loss Payee for][D][.]
4 4 5 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3	77

370)

FIGURE ZO

Other Additional Insured, Loss Payee and Mortgagee	BLANK	NON BLANK
None checked		[This certificate only applies to [D][.]
Additional Insured	[CH][is added as Additional Insured for][OT][, but only	[CH][is added as Additional Insured for][OT]
**************************************	with respect to operations performed on their behalf by and	[, but only with respect to operations performed
We change who change of the change	due to the negligence of][IN][.]	on their behalf and due to the negligence of]
		[IN][for][D][.]
Loss Payee	[CH][is added as Loss Payee.]	[CH][is added as Loss Payee for][D][.]
Additional Insured and Loss Payee	CH][is added as Additional Insured and Loss Payee for]	CH][is added as Additional Insured and Loss
and the same of th	[OT][, but only with respect to operations performed on	Payee for][OT][, but only with respect to
and Company	their behalf by and due to the negligence of][IN][.]	operations performed on their behalf and due to
=		the negligence of] [IN][for][D][.]
Mortgagee	[CH][is added as Mortgagee.]	[CH][is added as Mortgagee for][D][.]
Additional Insured and Mortgagee	CH][is added as Additional Insured and Mortgage for]	CH][is added as Additional Insured and
	[OT][, but only with respect to operations performed on	Mortgagee for][OT][, but only with respect to
land.	their behalf by and due to the negligence of][IN][.]	operations performed on their behalf and due to
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		the negligence of][IN][for][D][.]
20.77		

F-16URE 21

Sheet 1 of 2 Attorney

Docket No.: CRTEX-001XX

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed

below) or an original, f the subject matter which entitled: INTERNET INSUR	is claimed and for wh	ich a patent is	mes are i sought o	n the inv	ention
the specification of which	ch (check one):				
[X] is attached hereto.	[] was filed amended on	_ as Application (if appli	n No icable).		
[] was filed as PCT Into	ernational Application r PCT Article 19 on	No(i:	on _ f applical	ble).	
I hereby state that I identified specification to above.	, including the claims	s, as amended by	y any ame	endment re	eterrec
I acknowledge the duty to this application in a	ccordance with Title 37	, Code of Federa	al Regulat	tions §1.5	o6(a).
I hereby claim foreign foreign application(s) fidentified below any for filing date before that	or patent or inventor's eign application for pa	s certificate li atent or invento	sted belo or's certi	w and nav Ificate ha	re also
Prior Foreign Application	n(s) Date Fil	ed Pr	riority Cl	laimed	
(Number) (Country)	(Day/Month/Y	ear)	[] Yes	[] No	
(Number) (Country)	(Day/Month/Y	ear)	[] Yes	[] No	
I hereby claim the be	enefit under Title 3! s) listed below:	5, USC §119(e)	of any	United	States
60/163,615 (Application Number)	November (Filing				
(Application Number)	(Filing	Date)			
(Application Number)	(Filing	Date) r	Expre	ess Mail 127775 U	

Sheet 2 of 2

Attorney

Docket No.: CRTEX-001XX

I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.)	(Filing Date)	(Patented/pending/abandoned)
(Application No.)	(Filing Date)	(Patented/pending/abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to projecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

Stanley M. Schurgin, Reg. No. 20,979
Charles L. Gagnebin III, Reg. No. 25,467
Paul J. Hayes, Reg. No. 28,307
Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171 Beverly E. Hjorth, Reg. No. 32,033 Holliday C. Heine, Reg. No. 34,346 Gordon R. Moriarty, Reg. No. 38,973

Address all correspondence to:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor: Francis E. Hayes		
City of Residence	State or Country	Country of Citizenship
Boston	Massachusetts	USA
Post Office Address	City	State or Country Zip Code
245 West Canton	Boston	Massachusetts 02116
Street		
Signature: Please sign	and date in permanent ink.)	Date signed:
x / / /		$\mathbf{x} = \mathbf{x} + \mathbf{x}$
110	ru	November 3, 2000

DAD/kdm 237025